Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte RALPH D. YODER and RONALD E. STROHBEHN

Appeal No. 2004-0646[1]
Application No. 09/772,603

ON BRIEF

Before WILLIAM F. SMITH, SCHEINER and MILLS, Administrative Patent Judges.

SCHEINER, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 8-10, the only claims remaining. Claim 8 is representative:

8. A method of providing bacterial static and viral static activity, comprising:

oral dosing of a mammalian species with an anti-bacterial and antiviral effective amount of a treated, isolated and neutralized IgG fraction which has been treated by acid hydrolysis, heated from 15 minutes to 1.0 hour at a temperature of 35°C to 40°C and thereafter neutralized.

The references relied on by the examiner are:

Sprotte et al. (Sprotte)	5,871,731	Feb. 16, 1999
Bier	6,096,310	Aug. 1, 2000

Kempf et al. (Kempf), "Virus Inactivation During Production of Intravenous Immunoglobulin," Transfusion, Vol. 31, No. 5, pp. 423-427 (1991)

[1] As a preliminary matter, we note that this appeal is related to an appeal in application serial no. 09/941,675 (Appeal No. 2004-0647). We have considered the two appeals together.

Claims 8-10 stand rejected under 35 U.S.C. § 103 as unpatentable over Bier, Sprotte and Kempf.

We reverse.

DISCUSSION

"[I]n the past, bovine and porcine blood [sera have] been orally administered to aid domesticated livestock . . . in weight gain and overall health" (Specification, page 3, emphasis in the original). The present invention is directed to a "method of providing bacterial static and viral static activity" in mammals, comprising orally administering an effective amount of "a treated, isolated and neutralized IgG fraction[,]" specifically, an IgG fraction "which has been treated by acid hydrolysis, heated from 15 minutes to 1.0 hour at a temperature of 35°C to 40°C and thereafter neutralized" (see claim 8).

According to the specification, "[t]his [treated] protein has independent characteristics that are significantly different from the protein that it was derived from" (Specification, page 4). For example,"[t]he derived protein tested negative to a standard antigen-antibody reaction that is consistent with Bovine IgG concentrate" (id.), and "had a significantly different molecular weight than the starting material" (id.). "In addition . . . , when used against seven enteric bacterial strains, . . . the new protein [was] bacterial static when incorporated into bacterial media . . . appropriate for the test organisms[,]" reducing "growth of the test organisms . . . from 47.5% to 99.9% compared with controls" (id.). Similarly, "[i]n tissue cultures . . . infected with four selected virus strains, the test protein reduced virus growth from 95% to 100% compared with the controls" (id.). In contrast, the starting material, "when sterile filtered and tested to determine if the intact bovine IgG was bacteria static like the acid treated

soluble fraction, showed the whole protein concentrate was not bacteria static" (id., pages 4-5). According to appellants, treatment of the starting IgG concentrate (or fraction) "unfold[s] and modif[ies] the protein [in the IgG concentrate], making it antimicrobial in a manner not achievable by the original, untreated and unisolated IgG concentrate" (id., page 3).

Claims 8-10 stand rejected under 35 U.S.C. § 103 as unpatentable over Bier, Sprotte and Kempf. Bier teaches that "[i]mmunoglobulins derived from the blood, plasma or serum of animals, such as cow[s], goats, sheep and pigs, contain a broad spectrum of antibodies to bacteria and yeast" (Bier, Abstract) and can be orally administered to treat gastrointestinal disorders caused by bacterial and/or yeast overgrowth. Sprotte describes oral administration of immunoglobulins from plasma, colostral milk, milk, eggs or cell cultures to treat chronic pain (Sprotte, Abstract).

Kempf describes the effect of pepsin treatment at pH 4 and 37°C on the infectivity of several enveloped viruses in intravenous immunoglobulin preparations. "[T]o study the influence of pepsin treatment on [virus] inactivation[,]" Kempf "spiked IgG solutions with VSV [(vesicular stomatitis virus)] in the presence or absence of pepsin . . . These solutions were then adjusted to various pH values ranging from 3.7 to 7.4 and incubated for 16 hrs at 37°C" (Kempf, page 425). Figure 3 (Kempf, page 425) illustrates the results of a time course of VSV inactivation in the presence of pepsin at pH 4 and 37°C. The time-response curve showed that "inactivation of VSV at low pH in the presence of pepsin is accomplished within 7 to 8 hours" (id., page 426).

The examiner concedes that neither Bier nor Sprotte describes treating the immunoglobulins in the manner required by the claims, but concludes that "it would

have been obvious . . . to inactivate any IgG preparation and test for bioactivity as taught by [Kempf] for oral dosing as taught by [Bier or Sprotte] by treating any IgG preparation with acid hydrolysis . . . , heat[ing] at 37°C for one hour and then neutraliz[ing] with NaOH as taught by [Kempf] for a method of providing bacterial and viral static activity" (Answer, page 4). The examiner particularly notes that Kempf's "acid hydrolyzed IgG fraction has viral static activity toward . . . [v]esicular stomatitis virus (VSV), which is known to be transmitted orally and causes . . . disease in live-stocks" (Answer, page 4).[2]

Nevertheless, even if we assume, for the sake of argument, that it would have been obvious to inactivate virus in any IgG preparation by acid hydrolysis at 37°C (whether intended for oral or intravenous administration), we are still left with the explicit requirement that the claimed preparation must be heated for 15 minutes to one hour before neutralization. In our view, nothing in Kempf suggests this time period. Figure 3 of Kempf shows the results of an eight hour VSV inactivation time course. The examiner points to the one hour time point of the time course as evidence that it would have been obvious to heat the IgG fraction for one hour at pH 4 before neutralizing it, but the time curve shows that substantial inactivation of VSV requires at least 7 hours of acid hydrolysis at 37°C (Kempf, Figure 3). Kempf does mention that some other viruses, HIV for example, are inactivated in less time, but no data are shown, and no specific times are mentioned (id., page 426).

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[2] We disagree with the examiner's interpretation of Kempf's teachings to the extent that the examiner asserts that Kempf shows that the "acid hydrolyzed IgG fraction has viral static activity" (Answer, page 4). Kempf demonstrates that acid hydrolysis at 37°C inactivates virus in the IgG fraction, but the anti-viral activity of the hydrolyzed and neutralized fraction was not investigated.

We have no doubt that the prior art could be modified in a manner consistent with appellants' specification and claims. The fact that the prior art could be so modified, however, would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

In our opinion, the only reason or suggestion to modify Bier or Sprotte in the manner proposed by the examiner comes from appellants' specification. Accordingly, we find that the examiner has not established a prima facie case of obviousness for independent claim 8, the broadest claim on appeal. Accordingly, the rejection of claims 8-10 under 35 U.S.C. § 103 is reversed.

REVERSED

William F. Smith
Administrative Patent Judge)

Toni R. Scheiner
Administrative Patent Judge) BOARD OF PATENT APPEALS AND INTERFERENCES

Demetra J. Mills
Administrative Patent Judge)

Schwegman, Lundberg, Woessner
& Kluth, P.A.
P.O. Box 2938
Minneapolis, MN 55402